

THE DEVELOPMENT OF A SCHOOL-PARK SITE
FOR THE CITY OF LAWRENCE, KANSAS

by

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STATEMENT OF PROBLEM

The problem was to design a school-park site for a growing community in Eastern Kansas.

The site presented a distinct problem in landscape design requiring individual analysis of the site, recreational trends, and characteristics and existing facilities of the community. Furthermore, precise treatment of community needs, spacial relationships, and user convenience was necessary.

INTRODUCTION

History of the Site

On September 14, 1957 the United States Department of the Interior donated 65 acres of land to Douglas County, Wakarusa Township, the City Schools, and the City Park System of Lawrence, Kansas. This acreage was previously agricultural land belonging to Haskell Indian Institute located at Lawrence.

The property was divided; the county received 20 acres for park site, the township received 5 acres for a meeting hall, and the city was allocated 40 acres, 20 to be used as a school site and 20 as a park site. The park is to be known as Broken Arrow Park.

Description of the Site

The land is located outside of the city limits on the south edge of town and slopes gently southward eventually draining into the Wakarusa River which is a minor tributary of the Kansas River. The exact location can be seen on Plate II and the property lines and existing contours can be seen on Plate I.

A small but permanent stream which is subject to minor flooding flows along

the southern edge of the site. The south bank of this stream is a federally owned dike which prevents the Wakarusa River from flooding the site. The farm land to the south of the dike and adjacent to the east side of the park, belongs to the Indian school. With decreased emphasis on agricultural training at Haskell Institute this land may be used for another Department of Interior function such as a wildlife preserve, or sold for private development, but more probably it will be retained for the present and immediate future with its present usage.

The city limits of Lawrence forms the northern boundary of the site. Along this side residential properties back on the site. The only road which serves the site is a county maintained gravel road which runs along the west side of the site. The road is an extension of Louisiana Street of the City of Lawrence.

The land to the west of this road is presently in pasture but it probably will be subdivided within the next two or three years. When this development occurs, and with the possession of the park and school site by the city, the area will undoubtedly be taken into the city at which time the existing gravel road will be paved and a storm sewer and better sanitary sewer facilities may be developed in the area. Presently an extension of the city gravity flow sewer system can be extended from the residential development immediately north of the park site to approximately the 855 foot contour line. Sewer lines can be extended to approximately the 840 foot contour line from another nearby subdivision which employs a sewage pump. Natural gas, electricity, and city water can reach all areas of the park.

The land in the immediate park area is zoned for single family residences and most of the houses have been constructed within the last seven years. The population density is slightly less than seven persons per acre and is made up

for the most part of young adults with small children. A shopping center is located approximately one quarter of a mile north of the site.

As can be seen on Plate II a few trees exist on the site. The majority of the land is terraced and has not been used for farming purposes for several years. The soil consists of a 12 inch layer of rich loam with a deep layer of clay overlying a bedrock of Oread or Wakarusa limestone.

EXTERNAL FACTORS WHICH AFFECT THE DEVELOPMENT OF THE SITE

Recreational Trends of the American People

In 1954 the factory worker produced \$2.41 worth of goods as compared to 84 cents worth of goods in 1906. It is estimated that he will produce \$3.90 in 1975. According to the President's Council of Economic Advisors this increase in productivity will be accompanied by higher wages. Budget studies indicate that expenditures for recreation will increase at a faster rate than the rate of which income rises. (Williams, 1958). Public agencies will be expected to keep abreast of this growing interest in recreation.

Leisure time has multiplied by about one third and the population has doubled since the first of the century. By 1960 there will be 177 million people and by 1975, approximately 221 million; there will be more children in school by 1975 than there were people in the United States in 1860. (Williams, 1958). Our birth rate is over $3\frac{1}{2}$ million and due to increased longevity, the number of people over 65 has more than quadrupled since 1906. The demand for conveniently situated recreation parks and facilities of adequate dimensions will be far more insistent in the future than it is today and facilities designed today must be serviceable ten, fifteen or twenty years from now under economic and social conditions different from those of today.

Characteristics of the Lawrence Area

The Great Plains States have experienced a steady increase in population. It will probably move from the nearly 15 million now to about 18 million in 1975 with Kansas probably experiencing growth at about the regional rate. Lawrence will probably increase much more rapidly than the state. The city is located advantageously between Kansas City and Topeka and is quickly becoming a part of a regional urban industrial center. Lawrence is the county seat in the middle of a rich agricultural area and an increasing number of manufacturing plants are locating at Lawrence. There is a ready supply of water and power. There is a good labor pool and the proximity to the University insures an adequate supply of highly trained personnel. (Educational Consultants, 1957).

Lawrence is a major interchange on the Kansas Turnpike. In addition to the turnpike it is served by highways US 40, US 24, US 59, and K 10. The community is also served by Union Pacific and Santa Fe railroads and the Greyhound and Continental Bus Lines.

As can be seen on Plate II the city is expanding to the southeast, southwest and northwest. It is expected that growth will continue at about an equal rate in each of these directions. (Educational Consultants, 1957). In 1954 the population of Lawrence was 20 thousand and presently the population is 25 thousand excluding University students.

The National Recreation Association's Standards for Park Space and Distribution

Adequate space within a city must be preserved for parks and recreation places. The amount of space alone is not a sufficient measure of adequacy; the distribution and the specific use of the land are also important factors.

The National Recreation Association recommends that the desirable standards

for recreation space should be 10 acres per one thousand population. (Butler, 1958). They have also set up categories of recreation space, for which the amount of land and distribution is of importance. They are classified by the Association as the playlot, the neighborhood playground and the playfield.

The first category, the playlot, is for small children. It should serve a group of families ranging from 30 to 60 in number and should contain from 1,500 to 2,500 square feet. This unit is generally limited to large congested cities or where there is no backyard for play space. (Butler, 1958).

The second category, the neighborhood playground, is the center of recreation activities for a neighborhood. A location adjacent to an elementary school where supervised recreation is possible is desirable. The playground should be within one quarter mile walking distance of the area it serves and this distance should not exceed one half mile. No major streets should have to be crossed in reaching the park. One acre per 1,000 population is recommended as adequate for playground space. (Butler, 1958).

A single playfield should be available for each group of 20,000 population. It should have a minimum size of one acre per 800 population and is desirable to have at least a 20 acre site. (Gallion, 1950). Facilities suggested by the National Recreation Association are football, baseball, hockey, archery, swimming pool, outdoor theatre, band shell, a recreation building, play apparatus, softball, basketball, tennis, handball, and volleyball. Spaces are needed for quiet activities such as crafts and story telling. A section of the park should contain a playlot. It should contain low swings, a slide, a sandbox, jungle gyms, and space for running and circle games. Night lighting should be provided in the play field.

Existing Recreational Facilities in Lawrence

In order to best develop the new site as an integral part of the recreation-

al complex of the city it was necessary to make a study of the existing recreational facilities in the Lawrence area.

The following is a list of parks, playgrounds, and other recreational units presently existing in Lawrence. The size and available facilities follow the park name.

Robinson Park: .7 acres. A historical park featuring a plaque naming the twenty-nine men who settled Lawrence in 1854. Benches, Civil War cannon, and walks. View overlooking river.

Clinton Park: 3.7 acres. Picnic tables, fire places, restrooms, small shelter house, drinking fountains, walks, play apparatus, stream and foot bridge, and off-street parking.

Centennial Park: 35 acres. Play apparatus (lighted), picnic tables and fire places (lighted), water fountain, off-street parking and stream with rolling terrain.

Veterans Park: 3.8 acres. Picnic tables, fire places (lighted), two hard surface tennis courts, basketball goal, play apparatus, and off-street parking.

Parnell Park: 1.75 acres. Play apparatus, two basketball goals, and benches.

Central Park: 6.5 acres. Band stand (unused except for storage), picnic tables, hard surface basketball goals, play apparatus including an old locomotive and softball diamond for grade school play.

Tower Park: 1.6 acres. Junior sized softball diamond, drinking fountain.

South Park: 12.3 acres. Lighted adult size softball diamond with bleachers, wading pool, paved walks, rose garden, basketball goal, play apparatus including an old fire engine, lighted shuffle board, and band stand.

Edgewood Park: 1.4 acres. Being prepared for turf.

Park Hill Park: 2.2 acres. General play area.

Lincoln Park: 1.7 acres. Lighted adult size softball diamond.

Municipal Stadium: 4 acres. Lighted hardball diamond with concrete bleachers.

Community Building: Basketball court, stage, dressing rooms, kitchen facilities, and general purpose rooms.

Water Department Land: 40 acres. Boat landing, heavily wooded, pic-nicking and is subject to flooding.

The total park acreage in the city including the water department land is 112.2 acres.

The distribution of the park lands can be seen on Plate II. Since a neighborhood park should not be more than one half mile walking distance from the user, circles with one half mile radii were used to determine where neighborhood parks are needed. If a park contains a children's apparatus area it is designated as a neighborhood park and the center of the one half mile circle is placed in this apparatus area. As can be seen on Plate II there are several areas in the city which need neighborhood parks. The need is greatest in North Lawrence and in the vicinity of Schwgler School.

The use of circles with a one half mile radius using the park as the center, is not an entirely accurate measurement for park distribution. Several parks are located on or near major streets therefore limiting their accessibility. As an example, Central Park is bounded on the north by Highway 59 and US 40. This is a busy six-lane thoroughfare. Two blocks to the east is the central business district. Bounded by these two man-made barriers the park actually serves only a half mile radius to the south and west.

Uneven distribution, lack of space (112 acres existing as compared to the

250 acres which is deemed adequate for a city of 25,000), and the fact that two-thirds of the park land are in two large holdings, Centennial Park which has steep terrain and the Water Department land which is subject to flooding, indicates that the Lawrence recreational system is decidedly deficient in adequate recreational areas. County parks, city school playgrounds, recreational facilities and open space provided by the University and the Indian Institute, plus the facilities provided by private clubs and commercial forms of recreation help to offset this deficit.

Recreation Areas Within the County

The following is a list of parks and other recreational facilities presently existing in Douglas County:

Lone Star Lake: A county park with 170 acres of water surface with picnic areas and a boat house which provides boat rentals, meals, and fishing tackle.

4-H Grounds: Approximately 40 acres with stock arena for rodeos, horse shows, and other 4-H affairs. It is located adjacent to the eastern city limits of Lawrence.

Recreation Facilities Provided by the City School System

There is good cooperation between the city schools and the city recreational commission. Six of the city schools are used by the recreation commission for night recreation and during the summer months.

The following is a list of recreational facilities available at the school site:

Every elementary school has at least a fifty by fifty foot hard surfaced play area, a junior size softball diamond, and play apparatus. If the school has other facilities, they will be listed by the school's name. Each school

has an indoor gymnasium with basketball goals plus two outdoor goals.

Woodlawn School: 4.2 acres. Lighted adult size softball diamond with seats.

Lincoln School: .9 acres.

Pinckney School: 4.9 acres. Four basketball goals, two grade school softball diamonds.

Sunset Hills School: 9.7 acres.

Hillcrest School: .6 acres.

Schwygler School: 7.4 acres.

Centennial School: 6.0 acres.

Cordley School: 4.2 acres.

East Heights School: 3.8 acres.

New York School: 4.3 acres. Two grade school softball diamonds.

McAllaster School: 2.8 acres.

Central Junior High School: 5.2 acres. Two tennis courts, two basketball goals, softball diamond, indoor gymnasium.

Lawrence Senior High School: 40 acres. Football field (is a practice field), track, two ball diamonds.

The superintendent of the city schools believes that it is highly probable that a junior high school building, with its normal recreational facilities which would be extended to the public, will be constructed on the property given to the school by the Department of the Interior.

Facilities at the University of Kansas and at Haskell Indian Institute are available to a limited extent. Most of the entertainment is in the form of spectator enjoyment, however some use is made of their stadiums, sport fields and courts. The lake at the University is used for ice skating.

Clubs and Commercial Recreation

In addition to the above listed public recreational facilities, the following clubs and commercial forms of recreation are available: Swimming pool, bowling alleys, public golf course, country club with golf course, golf driving range, gun club (non-profit), archery club (non-profit), riding stable, and roller skating rink.

THE PROPER USAGE OF THE NEW PARK SITE

With the foregoing information in mind it was determined that the site could best be utilized if it were developed as a school-playfield-park complex. The major factors which influenced this decision are:

- 1) The National Recreation Association's desirable standard of one playfield for every 20,000 population with a minimum site of 20 acres. At the present time Lawrence, with a population of 25,000, has no play fields.
- 2) The fact that no other park land in the city is suitable for playfield development. Only two areas contain the necessary acreage, Centennial Park and the Water Department land. The terrain in the former is too rugged and the latter is subject to flooding.
- 3) The expressed opinion of the superintendent of the city schools that a junior high school would be built on the site and because of the good cooperation between the city schools and the city recreation commission.
- 4) The proximity of Park Hill Park which is a neighborhood park.
- 5) The location of Louisiana Street on the west side of the site which has the potential of becoming a busy street and the possibility that there will be no residential development on the south and east side of the park. A neighborhood park is best located in the center of residential development and away from busy streets whereas it is desirable that a playfield

be located near a major street for easy automobile access without increasing the flow of traffic on neighborhood streets.

6) The size and terrain are well suited for the development of a play-field.

DESIGN AND DEVELOPMENT OF THE SITE

To the greatest extent possible the area was developed as one unit with an attempt to create a fairness in financial expenditures of each agency. For purposes of discussion and because of problems peculiar to the school and township site they will be dealt with as separate units and the county and city park will be discussed as one unit.

The School Site

The northern most 20 acres of the entire site belongs to the city schools. They tentatively plan to build a junior high school on this site. The superintendent of schools believes it will equal the size of the junior high school under construction west of town. The junior high school under construction contains 60,000 square feet and the proposed building in this plan occupies an equal area. The reason that the exact building plan for the new junior high school was not duplicated was that terrain differences in the two localities necessitated a new design for the proposed school.

The building was located on the site with due consideration to the limit of the Lawrence gravity flow sewer system. The school will have some basement rooms, therefore, it was necessary for the building to be placed on or above the 870 foot contour if the rooms nine feet below grade were to be provided with a gravity flow sewer system. The building was placed relatively close to the street for easier access and to provide an adequate play space behind the building.

The shops have been placed in a separate building to the rear of the classroom section of the building to reduce noise. The gymnasiums with their locker rooms have been placed to the rear of the main building with an auditorium serving as a buffer between the gym noise and the classrooms.

The heating layout in the building will be such that it will be possible to heat those parts of the building which will be used for evening recreational purposes to a comfortable level without the costly heating of the entire area. Entrance and exits will be made directly to the areas to be used for community use. Light switches, restrooms and drinking fountains will be located in the recreation section of the building. Access to other sections of the building will not be necessary and will be prevented by locked doors or folding gates. (Heeb, 1959).

Screening was placed to the north of the building between the school and the residential properties which back upon the school site. In the building area the screening would consist of evergreen trees and shrubs with thorns such as Berberis mentorensis. A fence may be desired to keep students from trespassing on the residential properties.

Separate girls and boys play areas were placed behind the building and separated by planting. This buffer strip should be planted with a number of different species of trees and other plants to serve as a convenient nature study area. An attempt should be made to preserve the existing trees in this area. These play areas will not be illuminated for night use. The grading and drainage of this area and other areas will be discussed later in this paper in the section which covers the grading and drainage of the entire site.

A football field was desired and was located adjacent to the boys play area. It was so situated as to provide hillside seating after grading and to extend into the outfield of the proposed hardball diamond on the city park site. The

hardball practice field and the football field were overlapped to provide more intensive use of the area, reduce grading, turf and maintenance costs. The skinned area of the hardball diamond does not project into the football playing field. Football is played as an organized junior high school sport and it is anticipated that there will be a considerable number of games played on the field with the construction of the third city junior high school. The illumination of this field will be left to the discrimination of the school. The practice hardball field will not be lighted.

A hard surface court games area was provided south of the school. The property line between the school and park site divides the hard surfaced area into two equal parts. By combined usage more courts can be provided at less expense to both agencies. It is more economical to pave one large area than it is to pave two smaller ones. The fence placed on the property boundary line will serve as a backstop for both batteries of courts and thus reduce fencing costs. Grading expense will also be reduced.

The court area will provide room for five tennis courts, three basketball courts, two handball, one badminton and two volleyball courts. All courts will be of regulation size. Room was allowed for court expansion to the east to accommodate two more tennis courts and one more basketball court. A drinking fountain and a few benches will be provided outside the court area.

The hard surface of this play area should have these desirable qualities: resilience, good drainage, freedom from dust, non-abrasiveness, non-glare, good appearance and reasonable initial and maintenance cost. It is difficult to find a material to meet all these qualities, however, at the present a bituminous surface properly specified and laid seems to have fewer disadvantages than other types of surfacing materials. The use of a cork-asphalt surface has been used with good success in a number of cities. It is more

resilient than straight asphalt and its only present detrimental feature is that construction costs are somewhat higher. (National Facilities Conference, 1956).

The entire court area will be illuminated with general purpose floodlights to maintain an output of 20 foot candles over the entire area. (National Facilities Conference, 1956). Lighting as a separate subject will be covered later in this paper.

Parking was provided for 95 cars adjacent to the gymnasium and south section of the building. The parking area will serve school personnel, night school and night recreation participants, and spectators for plays, basketball games and other night time activities. Besides being well located to accommodate persons desiring to enter the building proper, it also adequately serves the courts and football area. The superintendent of schools believed that space for 80 cars should be the minimum and that 95 to 100 spaces would be desirable.

An area was allotted for bicycle parking which is independent from both the pedestrian and automobile circulation system. It was located to the north of the building. The drive which connects the bicycle area to the street will also serve to accommodate vehicles delivering supplies to the shops. Another drive independent of the parking lot was provided for the pick-up and delivery of students both by parents and by bus.

The Township Site

The five acres which were donated to the township are located along the east boundary of the park. To reach the township site it is necessary to cross either the city or county park land. The township has already begun to develop its land. A corrugated sheet metal building has been erected which serves both as a meeting hall and a maintenance shop. Considerable area has been graded

and graveled adjacent to the building for the parking of private autos and road maintenance equipment. A one lane gravel road has been constructed through the land belonging to the county.

The presence of the township maintenance shops made it desirable to locate the park maintenance building in the same area. The park maintenance building is relatively small and was located on city park property. It will be used primarily for the storage and repair of lawn maintenance equipment, park benches, signs, and not for the use of truck parking and repair. This function is handled by the city garage.

Both maintenance areas were screened on the north and west with evergreen material. A planting area was developed around the front of the existing building to provide a more pleasing entry to the meeting hall, to tie the building to the ground, and to provide summer shade on the south and west side of the building.

A turnout area was provided on the main drive for ease of depositing and picking up passengers desiring to go to the meeting hall. Automobile parking was provided to the south of the building with the area to the rear of the building to be used for parking of road maintenance equipment.

THE CITY AND COUNTY PARK SITE

Selection of Facilities

To determine what recreational facilities should be included in the playfield the suggestions of several nationally recognized planning organizations were obtained. There are no exacting standards for facilities that should be included in a playfield. Facilities will differ in different sections of the country for climatic, social and economic reasons. The adequacy of facilities already existing in the community will also influence the design of the play-

field.

In an effort to ascertain which facilities would best serve the recreational needs of the Lawrence public separate interviews were held with Mr. Wayne Ely, the City Director of Recreation, and with Mr. Larry Heeb, former Director of City Recreation in Lawrence and presently the State Recreational Consultant. Both of these gentlemen mentioned or approved facilities suggested by the national planning organizations with a few exceptions. These exceptions concerned themselves with such items as a band shell and games such as bocce, lawn bowling, and ice hockey. There are presently two band shells in the city and they are more than sufficient to take care of public demand. Bocce is generally popular with people of Italian ancestry so is not popular in this area. Neither lawn bowling nor ice hockey is popular enough in this area to warrant use of the space required or the high construction and maintenance costs.

Planning objectives which have been met in the design of this area are:

1. The provision of adequate space for the individual facilities to assure safe and satisfactory play.
2. Locate and relate the various facilities to encourage maximum use, and provide safety.
3. Provide for the convenience of the people using the area by the use of well planned drives, parking, walks, and with carefully located rest rooms, shelter and drinking fountains.
4. Keep construction costs low but do not economize in the initial construction costs if these savings will be multiplied by high maintenance costs.
5. Ease of supervision, operation and maintenance is to be accomplished.
6. Give the area an attractive appearance.
7. Provide facilities for all age groups in the community.

EXPLANATION OF THE DESIGN

This playfield has been designed to fulfill the recreational need of the various age groups within the community. The design is going to be explained in the light of how it meets the needs of the preschool child, the young child, the adolescent, the adult and the older adult. A brief description of the characteristics of each age will be given followed by a description of the facilities provided for them in the park.

The Preschool Child

The child under five years of age is rapidly developing his senses, physical coordination, and mental abilities. He desires family companionship and needs adult supervision for he has no sense of physical danger. Play is mostly solitary and spontaneously engaged in. Fun is closely related to discovery and being able to do something that he sets out to do. He does not have a sense of beauty, desire for social recognition, or tensions. These traits are developed. (Williams, 1958).

The space provided in the park for infant use was located near a drive and parking lot for the convenience of parents. The area was fenced to prevent tots from wandering into the street or in active game areas and to discourage the entry of older children in the area. The playlot unit was placed near a shelter house, rest rooms, the snack area, spray pool and sufficiently far away from baseball diamonds and other active areas to prevent balls from being inadvertently knocked in to the area.

Continuous adult seating was provided by means of a 16 inch high concrete wall around the perimeter of the area. A three foot woven wire enclosing fence runs along the top of this wall. A pergola type shelter is provided on one edge of the unit.

Four types of surfacing that offer a variety of experiences welcomed by the infant were provided. These were concrete, asphalt, turf and sand. The turf area is circular in nature and is 35 feet in diameter. It provides for random play and an area for low organized circle games. The concrete used was in the form of curbsings. Two curbs were incorporated in the design. They are about nine inches high and eight inches wide, a convenient sitting height for children. At one place the curb widens to form a "Concrete Mountain". Here the risers would be eight inches with 24 inch treads. Other than being used for climbing and sitting the curb serves the utilitarian purposes of forming a definite transition between the turf and asphalt and inhibits the driving of wheel toys on the turf or into the apparatus area. An extension of the curb flush with the ground and wide enough to carry one wheel of a lawn mower should extend along the curb into the turf area for easier maintenance.

Asphalt was deemed as the best surfacing for the apparatus area and the center section of the playlot. The central hard surface area would serve as a space for wheel toys, general circulation, and as a dividing strip between the apparatus and turf area. It will also provide some general all-weather play area. On this surfacing was also provided some permanent tables and seats scaled for tot use.

An open concrete block "building" was provided. This section of the playlot was developed to encourage spontaneous and self initiated activities. A drinking fountain at a low height was also provided.

The sand area was enclosed by concrete walls and bottom. Weep holes should be provided at the bottom of the box to insure good drainage. The low concrete walls serve as an inclosure for the sand and a seat for the youngsters. Sand is enjoyed by tots and encourages creative play.

The apparatus section was placed to one side of the circle to allow more

room in the circle for other types of play. The apparatus provided consisted of six low chair type of swings, a low slide and a small climbing device. Further discussion of apparatus construction will be discussed in more detail in the section on apparatus for the older child. The faint lines surrounding each piece of apparatus on Plate IV designates the area of safe and convenient operation of each piece of equipment as determined by the National Recreation Association.

The shrubbery planted in the area consisted of rugged, economical plants without thorns or spines. Besides adding a touch of beauty these plantings give the child a chance to begin exploring nature at an early age. Shade was provided for by planting Fraxinus pennsylvanica lanceolata both in the lot itself and around the perimeter of the circle. Fraxinus pennsylvanica lanceolata is an inexpensive tree, very hardy and will stand adverse conditions. It is a medium sized tree, grows rapidly and is relatively clean. The facilities, design, and construction of this playlot meet and in most instances surpass the minimum standards set up by the National Recreation Association. (Butler, 1958). The area will be illuminated.

The Young Child

Children in this age group are less dependent upon their parents and it is probable that at times they will come unattended by their parents to the park. The mental and physical development has progressed to a point where the young child is able to participate in and wants to be involved in games which have rules and demand some skill. He is not a good team player however for he wants to dominate play. For this reason it is desirable to have a supervisor in the area. The young child is interested in apparatus which requires climbing, hanging and balancing. The young child enjoys his play, learns from it and works

hard at it. He has a desire to create things. (Williams, 1958).

The space developed for the children in this age group was located in the same section of the park as was the totlot. It was placed somewhat farther from a drive and parking lot but it is still within a short walking distance from each. While it is farther from auto conveniences the facilities offered in the six to eleven year old area and the fence around the totlot should amply discourage the use of the totlot by the older children. As with the playlot this area was placed near a shelterhouse, rest rooms, snack area, spray pool and far enough away from ball diamonds. This area is sufficiently distant from drives and active game areas that fencing was not deemed necessary.

The shelter house serving this area could be of concrete block construction for low cost construction and maintenance. The building proper measures 30 x 18 feet with an overhang and concrete terrace extending 25 feet to the northwest. This multiple purpose building houses rest rooms and a general purpose room. The general purpose room will be used for crafts, a warming house for ice skaters, shelter in case of rain, storytelling, and a headquarters area for a recreation supervisor. It was not anticipated that a full time person will be engaged as supervisor but the present practice of employing a supervisor during the summer months for half days will continue to prove satisfactory. The sheltered terrace would provide more space for crafts, dancing, a telephone, and a sheltered play area.

A large recreational building was not placed on the site. The proximity of the junior high school and their indoor recreational facilities plus the good local cooperation between the city schools and the recreation commission would make another large building which duplicated these facilities a needless waste.

Playground apparatus is valuable in that it provides well known play interests of children such as climbing, sliding, balancing and experiencing

various types of motion. In selecting apparatus the types which serve the various outstanding play interests, provide fun, and have definite development potential were chosen. The selected apparatus includes a set of seven, twelve foot swings, an eight foot slide, a merry-go-round, a balancing beam, and an eight foot climbing pyramid.

The swing: The swing has long retained it's popularity and serves a wide range of ages. The top suspension pipe used in the frame support is three inches in diameter and the uprights are two inch diameter pipe. Three pipes are used to support each end. Each swing requires five feet of space on the suspension bar and uprights are required on every three swings. Steel chain will be used and the seats may be of wood, aluminum or of the belt type. Most swing accidents occur when children are hit by swing seats, therefore the belt or sling type is desirable as a safety factor. Wooden or metal seats will have rounded edges and will be cushioned with rubber bumps. The collar which holds the swing to the suspension bar bears much of the strain of swinging so they will be of strong and durable nature. Roller bearing hangers will be used.

The slide: Another popular item is the slide. It encourages climbing, the taking of turns and satisfies the universal desire to slide down something. Steel chutes with the absence of protruding screws will be used. The steps are conveniently spaced and the angle with the ground is less than 60 degrees. A hand rail is provided on both sides and the width of the stairway is such as to permit only one person to ascent at a time. A small platform is placed at the top of the steps to give the child an opportunity to become properly seated. The hand rail extends to the top of the narrow platform but is not continued as a guard rail on the slide since children are likely to catch their arms on it. To keep children from falling off of the slide the chute sides will extend up approximately eight inches. The supporting will be of galvanized steel pipe

set in concrete.

The horizontal ladder: This structure encourages such body building activities as climbing, swinging, chinning and other forms of exercise. The ladder will be hung six feet above the ground and will be twelve feet long. Rungs of the ladder will be welded or otherwise assembled to prevent the turning of rungs while in use.

The climbing structure: A pyramid type of structure satisfies the children's natural inclination to climb. The pyramid shape permits only a few at a time to reach the highest level thus guarding against overcrowding whereas jungle gyms with vertical sides and flat tops permit children to stand on the top eight to 12 feet in the air without hand holds.

The horizontal bar: This is an excellent piece of equipment requiring little space. It develops physical strength and coordination. A galvanized steel pipe, one inch in diameter, is used for the bar itself. Two uprights of three inch pipe are set in concrete five feet apart.

The balance beam: This piece of apparatus is valuable in the development of poise and balance. It consists of a two inch plank, 12 feet in length, set on edge. A taut cable may be used as a substitute for the balance beam.

The merry-go-round: The merry-go-round is popular and accommodates a large number of children at one time. They are held to have less value than the above mentioned play apparatus. Many authorities believe they produce a hazard due to the power developed on them resulting from the large number of children accommodated. Authorities do agree that the merry-go-round attracts children to the play area. It will be constructed so children cannot fall or crawl under or through it. The mechanism will be designed so neither fingers or arms can be caught between moving parts. The merry-go-round will turn on a roller bearing device.

The see-saw: The teeter-totter was not included because it is not highly favored by many play ground workers. It has the advantage of teaching cooperation, however, they take up a great amount of space for the small number of people using them and are hazardous. These hazards are: the pinching of fingers at the fulcrum point, the pinching of feet and limbs at each end, the accidents which occur when the child on the lower level hops off, and other children walking under the occupied teeter-totter.

Other apparatus: Parallel bars, flying rings, and other gymnasium apparatus encourage bodily exercise but should be kept in the gymnasium where they will be used only with constant supervision and with adequate padding and protection.

As a whole the apparatus should be such as to insure safety, serviceability, and economical maintenance. All exposed pipe will be hot galvanized to prevent rust. The supports for the apparatus will be set in concrete and the top of the base will be crowned to shed water.

Hop-scotch areas were marked on the surfaced area. Picnic tables were provided for crafts and parents. A drinking fountain was provided.

A circular turf area 50 feet in diameter was provided near the apparatus for organized play. This turf circle was surrounded by a 12 foot concrete surface beyond which is an additional, larger turf area. The 12 foot circular concrete surface is to be used for roller skating and ice skating. This circular surface connects with a spray pool which is also adjacent to the apparatus area. The spray pool has a spray nozzle with a radius of 50 feet in the center, flush with the surface, and the pool will drain slightly off center. This area is also to be used for ice skating, roller skating and dancing. Experience shows that such a pool would be dry three hours after turning off the spray enabling it to be used for dancing in the evening. The spray basin was constructed of concrete with a steel trowel finish and with sloping curbs. This spray pool

would provide the coolness and pleasure of water play but without the hazard of a wading pool's depth.

An ice skating area was included in the park design because at the present time Potter's Lake is the only area available for ice skating use. This small lake belongs to the University and it is felt that with the advent of a serious accident skating will be prohibited at this locality. Break throughs have occurred in the past and now that the lake has been dredged these accidents could become serious. The entire spray pool plus the circular loop around the turf grass area and the side walk leading to the shelter house will be used as ice skating surface. Flooding of an area generally produces better ice than spraying of water on the surface during cold spells. Water sprayed on a surface generally leaves the spray nozzle at 40 degrees which warms the frozen ground or hard surface. It is also necessary to do the spraying during uncomfortable temperatures. The reason that areas are not flooded well before freezing temperatures occur is that water tight surfaces are not available or where this requirement is met, it would be necessary to flood the area to a depth of 18 inches or more which would create an attractive nuisance if the area was unsupervised. (Butler, 1958). An attempt here was made to provide a water tight surface and which will not require a depth of over six inches to flood the entire area. Sloping curbs would contain the water but would prevent ice damage to curbing by allowing the ice to slide up the curb when it expands while freezing.

A fireplace was placed near the skating rink for the enjoyment of the skaters and the warming house is close by with a warm room and rest rooms. Either wooden planks, rubber runners, or fiber belting should cover concrete floor areas of the warming house to prevent its concrete floor from being nicked and to protect the skaters' blades.

From this discussion it should not be construed that dancing or ice skating is to be limited to the six to 12 year old group merely because it is discussed under that age group.

General planting of play apparatus and spray pool area will include Pinus sylvestris which were planted to the north of the spray pool to provide protection from the winter winds to the ice skaters. In the apparatus area itself, Gleditsia triacanthos inermis were used. This tree is an excellent park tree, growing relatively fast, producing good shade and is relatively clean. It has a fine textured and dark foliage. Its black bark partially covered with snow and the fine textured pattern of the twigs create an interesting winter effect for the ice skating area. Several Koelreuteria paniculata were planted adjacent to the apparatus area to give summer color.

Two types of shrubbery were planted in the area. Rhus aromatica was planted some distance from the apparatus area. It is a native shrub and works well into the landscape. Between the apparatus area and the spray pool a grouping of Cornus stolonifera were planted to provide summer foliage and the red twig feature that is attractive against winter snow.

The lighting provided will maintain five foot candles in the apparatus and shelter house area. (Planning Facilities Conference, 1956). The lighting in the dancing-skating area will be of a lower intensity and some very interesting lighting effects could be developed.

The Adolescent and the Adult

The teenager is physically capable and because he wants to act as an adult he generally uses the same facilities as do adults. He is more active than his seniors and consequently uses some facilities more than do the adults. He is generally physically mature but he is not an adult. He tries to be mature but

lacks discrimination. Adults, especially parents, are a problem to him because he wants independence but still he wants to feel secure and have adult approval. He is noisy and occasionally displays physical violence. (Williams, 1958).

The adult is generally physically healthy but many times prefers to engage in sports as a spectator rather than an active participant. After working he feels too tired to actively engage in physical exercise even though this tiredness is often the result of tensions and boredom which physical exercise could alleviate. He has a fair appreciation of beauty, enjoys cheerful sociability, and needs a quiet place to collect his thoughts. Generally he enjoys doing things for others, especially for his own children. He is tremendously proud of his own children and enjoys watching them at their play. (Williams, 1958).

Facilities Offered to Adolescents and Adults

The facilities in the school building and those which are on the city park-city school property line; specifically, the hard ball practice area, the football field and court games, have been discussed under the section on the school site. Other recreational activities which are available to this group such as dancing, ice skating, shuffleboard, croquet, deck tennis, and horseshoes, have already been discussed or will be explained under the section concerning older adults.

The Softball Diamond

A regulation, lighted, softball diamond has been placed on the city park property. It was equipped with bleachers and was situated near the parking lots and a drive for the convenience of spectators and players. The orientation of the field is satisfactory for afternoon games. The sun in July at four o'clock is 33 degrees above the horizon and situated nearly directly west. The sun sets

around 7:30, 37 degrees north of west. (National Facilities Conference, 1956). The pitcher, batter, catcher, and umpire are all in favorable positions and in most playing situations the first baseman will have little difficulty with the sun. It is anticipated that most games played on the diamond will be night games therefore the infield will be illuminated with lights which will produce 20 foot candles and the outfield will be maintained at 10 foot candles. (National Facilities Conference, 1956). The diamond is regulation size and has an outfield distance equal to that recommended by the National Recreation Association. (Butler, 1958).

The Swimming Pool

The National Recreation Association suggests that a swimming pool be located on a playfield site. Factors which prevent the placing a swimming pool on the site at the present time are the absence of proper drainage facilities in the area and the presence of a privately owned commercial pool in the city which would mean public versus private enterprise. Two attempts have been made in Lawrence to establish a municipal pool within the last ten years. The first attempt was defeated partially because many thought the bond amount was excessive and also because of racial reasons. The second attempt was rejected when it was suggested that the pool be located in Centennial Park on the western edge of the city. People in the south and east were definitely against this proposal.

With the southward development of Lawrence it is anticipated that better public utilities such as storm and sanitary sewers will be placed in the area. The future of the commercial pool does not appear to be too optimistic. When the commercial pool was built it was outside of the city and surrounded by farm land on three sides and a spotty residential area on the other. It is

presently within the limits of the city and is slowly being surrounded by commercial enterprises. This development has undoubtedly caused an increase in property taxes. It is an old pool therefore operating costs are probably high. The pool is in operation only during the summer months and it is felt that a higher return on the estimated \$100,000 investment could be realized in some other commercial venture.

Since better drainage facilities will reach the park site and because the future of the commercial pool seems to be somewhat unstable a pool site was included on the city park property. As can be seen on Plate IV the pool is relatively small, containing slightly over 5,000 square feet of water surface. If a long range development plan could be offered to the citizens for swimming pool development which would set up several small pools in different sections of the community and further providing that one pool be developed at a time and the second pool not begun until the first had paid for itself, the initial cost of providing pool facilities would not be so exorbitant and with a plan for pools in all sections of town the various neighborhoods would be satisfied. The National Recreation Association recommends that 500 square feet of water surface be provided for each 1,000 unit of population. (Butler, 1958). This would indicate that there should be five such pools in the city.

Facts now indicate that steady customers at a pool come from close by and that a majority of swimmers which use a pool do not travel more than a mile and one half to reach the facility. (Williams, 1956). This indicates that more, smaller and less expensive pools will give the maximum recreational value.

"An analysis was made of the construction costs of 51 pools built in and since 1948. Wide variations are noted in the cost of pools of comparable size and shape. Average costs varied from \$33,000 for smaller rectangular pools to \$144,000 for larger ones.

Data on the actual cost of constructing the pools have limited value because factors such as type of construction and finish, size and shape of pool, size and type of filter plant, site conditions

and accessibility to source of building materials directly affect costs. The purchasing power of the dollar in the year the pool was built must also be taken into consideration in studying pool costs. (National Cooperation Conference in Aquatics, 1956).

The author of this quotation generally considers a pool of under 4,000 square feet to be a small pool and one exceeding 24,000 square feet to be large. By using these figures a pool with a surface area of 5,000 square feet would cost \$38,500, however, with higher building costs this figure would have to be considerably increased.

The multiple unit pool was used in this design. This type of pool has the advantages of the separation of the divers and of providing a high percentage of water of wadeable depth.

The swimming unit size and shape provides for six seven-foot racing lanes and the length of 75 feet and 18 inches represents the official interscholastic, intercollegiate and A. A. U. short course for competition swimming. (National Facilities Conference, 1956). Since at least 75 percent of the people using pools stay in water less than five feet deep the pool depth ranges from five and one half feet to three and one half feet at the shallow end. (Butler, 1958). The shallow end was placed nearest the bath house for safety reasons.

The diving pool measure 40 by 35 feet. Diving boards were placed on the southwest side of the unit. This enables the diver to look where he is diving without looking into the sun or sun reflection on the pool surface. Two boards were installed, fifteen feet apart and ten feet from each side of the pool. The pool depth should be a minimum of 12 feet if a three meter board is to be used. (National Facilities Conference, 1956). A higher board will not be used and if the only diving height desired is a one meter board the minimum depth need only be ten feet.

The wading pool was separated from the main swimming area by a fence.

Depth of this pool ranges from 12 to 18 inches. To meet the problem of the children with their questionable sanitation the water for the wading pool will recirculate at a higher rate than the water in the main pool and it should be possible to drain the pool daily without effecting the water level of the main pool. (National Cooperation Conference in Aquatics, 1956). The pool was partially shaded by an overhanging roof. Spectator seating was adjacent to the area for the seating of parents or parents can accompany children directly into the area.

The size of this multiple unit pool would accommodate approximately two hundred persons according to the standard of 27 square feet of water area per swimmer as set up by the Athletic Institute, Inc.

The bathhouse was also designed using figures from this institution. The house was designed for efficient use at 90 percent of pool capacity with adequate space allowed for dressing, toilet facilities, filters, storage, office space and checkroom.

The checkroom and concessions area were provided in one room to reduce the number of personnel needed to operate the pool. The checkroom-concession area was connected to the dressing room section of the building by a wide, open hallway. The entire bathhouse could be built as two separate units, the checkroom-concession unit and the dressing room and filter unit. The smaller unit could be built independent of the larger section if the concession area was desired in the park before the advent of the swimming pool. At this time the main section of the bathhouse could be constructed.

Wide decks which contribute to the comfort, safety and enjoyment of bathers were provided. The deck area more than doubles the water surface area. Suggested minimum distances between pools and fences for ease of circulation have been met. (National Facilities Conference, 1956). The deck should slope away from

the pool towards drains.

A reinforced poured concrete pool basin was used for long life and satisfactory use. The surface of the basin should be easily cleaned and be nearly as non-slip as possible. As a rule, however, the better traction a surface affords the more difficult it is to keep clean. A steel trowel pool basin with a tile strip at the water level is to be used. To prevent slipping on turns in competitive swimming end walls are surfaced with abrasive tile for a distance of three feet below the overflow gutters. For the decks either an unglazed, non-slip tile or a brush finished concrete surface will be used. Coloring may be added to the concrete to reduce glare.

The roll out or deck level type of overflow gutter will be used to carry off scum and debris. These types are easy to clean, exposed to the sun at all times and low in cost to build. The rim of the gutter will be level throughout. A coping is not needed with a pool having a deck level type of gutter. (Butler, 1958).

The pool markings which indicate water depth and mark racing lanes will be inlaid with tile.

The water circulation and filtration pumps used will be able to completely recirculate the water within every six hours. Inlets were located at an even distribution around the pool. Main drains were located in the deepest part of the pool and are of sufficient size to drain the pool within four hours. The diatomaceous-earth filters are used because they require less space, function effectively and are more economical to install. (National Cooperation Conference in Aquatics, 1956).

The pool will be lighted to extend the pools use. Overhead lighting will be located at intervals around the pool which will illuminate decks and areas surrounding the pool with approximately five foot candles. (National Facilities

Conference, 1956). In order to prevent broken bulbs and insects from falling in the pool, the lights will not be suspended over the water. Under water lighting is in the diving pool and at the deep end of the swimming pool. This enables the lifeguard to see the bottom of the pool at night and adds to the beauty of the pool. The lighting system can be serviced without draining the pool or requiring outside tunnels and will be approved by the Underwriters Laboratories, Inc.

An eight foot woven wire fence completely encloses the pool to afford control and safety of operation.

Spectator accommodations were provided along the side of the pool outside of the pool fence. An area was projected between the diving pool and wading pool for spectators use.

The bathhouse was placed on the southwest side of the pool to provide shade on the deck and to block summer winds. Quercus borealis was planted around the pool and bathhouse to provide some shade. This tree has relatively slow growth and is clean. Shrubbery was planted in front of the bathhouse to improve its setting and accent its entrance.

The Picnic Area

In general there are two types of picnic area. Those which are used by large organized groups and those intended primarily for families or other small groups. The same picnic area may provide both types but better results are likely to be attained if an area is planned for a specific type of use. Desirable features of any picnic center are a wooded area, a location distant from other activities, an attractive setting, and easy access from an automobile road. Most families and small picnic groups like seclusion.

The individual picnic units in this park were designed to serve families or

other small groups. The areas are readily accessible. They are built along a park road and each unit includes space for an automobile. Small, simply constructed fireplaces were installed near the picnic tables. The tables are of metal and wood construction which can be moved to prevent the destruction of turf in any one particular area. A small shelter house with rest room facilities, water, and childrens play equipment was provided. On one side of the picnic area were located shuffle board, horseshoes, and other small group activities. Open fields for sports and childrens games make possible activities which often develop in the picnic atmosphere. The large open meadow will also be used for unorganized play. Also people come to a park to get away from the tight, restricted feeling of many residential areas and a large open meadow will be a pleasant relief. The northeast corner of the park by the stream is a quiet area used for nature study and is provided with a council fire which could be used by Boy Scouts and other such organizations.

Facilities for Older Adults

The older adult is experiencing a general decline of energy and physical disability is a major characteristic of these people. When their children are adequately supporting themselves and with the termination of employment many oldsters have an over abundance of free time. Many of them are quite active with keen minds and with the success of medicine the vitality of these citizens will be improved in the future. (Williams, 1958). The older adults of today grew up in a period when there was little time for leisure and most of them are at a loss as to ways of spending their long periods of free time. Opportunities should be available to enjoy the companionship of their own age group while engaging in non-strenuous forms of recreation. The group is increasing in size and will continue to do so. In 1906 one out of 25 persons was over 65; in 1950, one

in 12; and by 1980 one in seven will be over 65. (Williams, 1958). This large group of senior citizens will make great demands on the recreational picture of the future.

The older adult area was placed near a drive and parking lot for easy access. It has been removed from the childrens area for the noise generated in this area tends to annoy older people. The entire area will be well shaded. The sitting area will be well designed, surrounded by shrubbery and will have a hard surface with an attractive finish or pattern on it. This privacy and attractive appearance generally means greater use. Other than an area for just sitting and chatting, it could be used for sewing, whittling and other crafts, playing cards and checkers. Tables in this area will be permanently anchored and made of concrete with game boards inlaid on the surface with tile. The shelter house would be used for the same type of recreation as the sitting area and will be provided with tables. The shelter house provides rest room facilities and general park storage.

The horseshoe area was isolated on one side of the older adult area as a safety measure. Five courts were provided of regulation size. Room is available for expansion if demands warrant an increase.

Four shuffleboard lanes, two croquet, two deck tennis and two badminton courts were provided. All courts are turf except the shuffleboard which is steel trowled concrete. Seating and a shelter are provided at each end of the shuffleboard lanes. For construction details of these seats see Plate VI.

PLANTING DESIGN

Plant materials serve important functions in the park and much consideration should be given to their use. Plantings create a third dimension height in the park, they add a coolness which is both actual and psychological, they screen

areas, act as a transition between sections having intense and slight use, tie building to the ground and supply color, form and fragrance.

A planting design has been made for one section of the park, see Plate V, and the plant materials used in this area are:

Trees:

Scientific Name	Common Name
1. <u>Tilia americana</u>	American Linden
2. <u>Fraxinus pennsylvanica lanceolata</u>	Green Ash
3. <u>Platanus occidentalis</u>	Sycamore or Plane Tree
4. <u>Quercus borealis</u>	Northern Red Oak
5. <u>Koelreuteria paniculata</u>	Goldenrain Tree
6. <u>Cercis canadensis</u>	Redbud
7. <u>Carya illinoensis</u>	Pecan
8. <u>Quercus macrocarpa</u>	Bur Oak
9. <u>Celtis laevigata</u>	Sugar Hackberry
10. <u>Gleditsia triacanthos inermis</u>	Moraine Locust
11. <u>Pinus sylvestris</u>	Scotch Pine

Shrubs:

Scientific Name	Common Name
1. <u>Prunus tomentosa</u>	Nanking Cherry
2. <u>Berberis mentorensis</u>	Mentor Barberry
3. <u>Berberis thunbergi</u>	Japanese Barberry
4. <u>Pyracantha coccinea lalandi</u>	Scarlet Firethorn
5. <u>Juniperus virginiana Cannart</u>	Cannart Red Cedar
6. <u>Chaenomeles lagenaria</u>	Common Flowering Quince
7. <u>Syringa vulgaris</u>	Common Lilac
8. <u>Spiraea thunbergi</u>	Thunberg Spirea

Shrubs (cont.):

- | | |
|------------------------------------|------------------|
| 9. <u>Spiraea vanhouttei</u> | Vanhoutte Spirea |
| 10. <u>Philadelphus coronarius</u> | Sweet Mockorange |
| 11. <u>Rhodotypos scandens</u> | Black Jetbead |
| 12. <u>Cornus stolonifera</u> | Redosier Dogwood |
| 13. <u>Rhus aromatica</u> | Fragrant Sumac |

Other plant materials which could be successfully used in the park are:

Trees:

- | Scientific Name | Common Name |
|--|---------------------------|
| 1. <u>Acer negundo</u> | Boxelder |
| 2. <u>Acer platanoides</u> | Norway Maple |
| 3. <u>Acer saccharum</u> | Sugar Maple |
| 4. <u>Carya laciniosa</u> | Shellbark Hickory |
| 5. <u>Diospyros virginiana</u> | Common Persimmon |
| 6. <u>Elaeagnus angustifolia</u> | Russian Olive |
| 7. <u>Gymnocladus dioica</u> | Kentucky Coffeetree |
| 8. <u>Juglans nigra</u> | Eastern Black Walnut |
| 9. <u>Liriodendron tulipifera</u> | Tuliptree (Yellow Poplar) |
| 10. <u>Malus ioensis</u> | Prairie Crabapple |
| 11. <u>Populus deltoides - missouriensis</u> | Southern Cottonwood |
| 12. <u>Quercus palustris</u> | Pin Oak |
| 13. <u>Tilia platyphyllos</u> | Bigleaf Linden |
| 14. <u>Sapindus drummondii</u> | Western Soapberry |
| 15. <u>Ulmus americana</u> | American Elm |

Shrubs:

- | Scientific Name | Common Name |
|------------------------------|-------------------|
| 1. <u>Cornus asperifolia</u> | Roughleaf dogwood |

Shrubs (cont.):

2. <u>Cornus racemosa</u>	Grey Dogwood
3. <u>Forsythia viridissima</u>	Greenstem Forsythia
4. <u>Forsythia suspensa</u>	Weeping Forsythia
5. <u>Forsythia intermedia</u>	Border Forsythia
6. <u>Hamamelis vernalis</u>	Vernal Witchhazel
7. <u>Hamamelis virginiana</u>	Common Witchhazel
8. <u>Ligustrum vulgare</u>	European Privet
9. <u>Lonicera fragrantissima</u>	Winter Honeysuckle
10. <u>Lonicera morrowi</u>	Morrow Honeysuckle
11. <u>Lonicera tatarica</u>	Tatarian Honeysuckle
12. <u>Rhamnus cathartica</u>	Common Buckthorn
13. <u>Rhus glabra</u>	Smooth Sumac
14. <u>Ribes aureum</u>	Golden Currant
15. <u>Ribes missouriense</u>	Missouri Gooseberry
16. <u>Symphoricarpos orbiculatus</u>	Indiancurrant Coralberry
17. <u>Syringa persica</u>	Persian Lilac

Evergreen Trees and Shrubs:

Shrub:

<u>Juniperus chin. pfitzeriana</u>	Pfitzer juniper
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Trees:

Scientific Name	Common Name
1. <u>Pinus nigra</u>	Austrian pine
2. <u>Pinus ponderosa</u>	Ponderosa pine
3. <u>Pinus strobus</u>	White pine
4. <u>Juniperus virginiana</u>	Redcedar

The plant names used in the foregoing lists are in accordance with

Standardized Plant Names.

This is not a comprehensive list and other trees and shrubs may be added to the list, however, they should be varieties which are suitable to the Lawrence area, require little or no maintenance, and which are relatively inexpensive. Generally native, nursery-grown plants blend into the composition and being indigenous they present a small cultural problem.

Principles which have been followed in preparing the planting design on Plate V should be used in developing the entire area. These principles are:

1. Mass planting is more effective than spotty individual specimens.
2. Trees of the same variety should be grouped together to give a grove-like effect. If only a small number of trees are being grouped together, plant an odd number. For the most part evergreen trees should not be planted individually but in groups of a minimum of three. Evergreens are good for screening, particularly on the north side of buildings and play areas. They should not be used on the southwest side of areas where a summer breeze is desirable.
3. Reserve and restraint in the type of material used rarely fails to produce a pleasing composition.
4. The use of exotic materials should be avoided.
5. Growth characteristics of the plant should be analyzed and the ultimate size of the plant taken into consideration.
6. Form, texture, color in flower, foliage, stem and fruit must be considered. Fall coloration of foliage and winter outline add much to the beauty of the planting.
7. Small shrubs under three feet of height should not be used in remote areas of the park because they lose their identity. They may be used in intensified areas.

Other suggestions for the use of plant materials are that the planting of flowers or the use of clipped hedges on such a large playground is not practical because of the cost of maintenance. Shrubs should not be set along the border of areas used for games where balls are certain to be thrown or batted into the shrubbery. Trees should not be planted too near or on the court game area because they cast shadows which are annoying to the players. Furthermore they prevent rapid drying of the courts after a rain. Trees should not be planted in the field game areas where they would interfere with play. In the nature study area an exception to the practice of grouping tree varieties should give way to the planting of numerous different species. The turf recommended for active play areas which receive an abundance of sunlight is U-3 Bermuda Grass. Kentucky of Merion Bluegrass or Kentucky 31 Fescue is suggested for use in less active shaded areas.

LIGHTING

A large percentage of the leisure time of working people is in the evening, therefore, various facilities in the park will obtain maximum use only if they are illuminated. The summer afternoon heat is a detriment to park attendance, however, with well lighted facilities persons will use the area at night.

The lighting will be designed so that direct light rays do not strike the eyes of players or spectators. Objectionable glare will be eliminated by the proper degree, height, and location of equipment.

Neat appearance and permanence are important in lighting fixtures so the use of steel poles and underground wiring will be used. Enclosed flood lights instead of the open varieties will be used.

The illumination intensities of specific areas have been given. For general park and street lighting three foot candles will be maintained.

(National Facilities Conference, 1956). For best results the problems of lighting recreation areas should be taken to a competent illuminating engineer.

TRAFFIC CIRCULATION AND PARKING

The park is entered from Louisiana Street by a single entrance. This main drive splits upon entering the park and in a free form fashion creates a loop which allows automobiles to stop or park near the major facilities in the park. This drive is 24 feet wide and carries two-way traffic. It is curbed and constructed of either asphalt or concrete. With the possibility of residential and street development on the Haskell land located to the east of the park provisions are made for an entrance to the park from this side. The shape of the drive should provide interesting driving and reduce the desire for speeding since there are no straight sections or long arcs with a continuous radius.

Turn out areas eight feet wide were provided near each of the major facilities to allow convenient pickup and delivery of persons. Because of the anticipated high usage of the major activity area a turnout drive divided from the main road by a turf area was provided.

Parking lots were situated near major activities in such a manner as to make it unnecessary to cross the main drive to reach the facility after the car is parked. In each case there is room for expansion of the parking lots should there be a demand for it.

Area was allotted in all lots for planting purposes and ample room was provided for the parking of individual vehicles. Forty-five degree parking was used throughout the main parking lots with 15 foot aisles and stalls which measure $18\frac{1}{2}$ x $8\frac{1}{2}$ feet.

The road which leaves the main drive and goes into the picnic area is 15 feet wide and constructed without curbs. Convenient parking stalls for

families or other small groups are provided at intervals around this one-way drive.

GRADING AND DRAINAGE

The purpose of grading is to provide relatively level areas for buildings and organized games and to facilitate the removal of excess water from all outdoor areas. Plans for overall drainage and grading are included. Plate III shows proposed two foot contours and Plate V shows existing and proposed two foot contours in the swimming pool area.

Because of the gentle terrain of the area and the use of natural drainage ways very little earth moving was involved. The only fill which has a slope of one to three was the hillside seating area near the football field. All other slopes are one to five or less to facilitate mowing. The slope on field game areas was maintained at approximately one foot in 75 feet. The deepest cut or fill on the property does not exceed seven feet in depth or height. An attempt has been made to make "cuts" balance "fills".

In the grading process the top soil will be stripped off and placed in a stock pile. This top soil will be replaced upon the subgrade which will parallel the finished surface.

Grading around the school building drains water away from the building at a continuous slope. Water which falls onto the streets and parking area was contained and removed from the property via street gutters. Water falling on turf areas was not diverted into the drives but was drained with natural water ways. The play areas behind the building were slightly crowned with a natural drainage area between them. The football field drains from northwest to southeast with a slope recommended by the Construction Division Office of the Chief Engineer of the United States Army. Agricultural tile six inches in diameter

were buried at the bottom of the hillside seating to carry off the water which would drain from this slope. The water would be diverted northeast and southwest to open drainage ditches. A shallow ditch at the top of the seating slope will prevent excess water from the boys play area running down this slope.

The hard surface court area slopes to the south with the north edge of the court being one foot higher than the south edge. Agricultural tile was placed at the base of the north and south slopes of the court area diverting the water to the west.

The swimming pool site will be leveled when the overall park grading is accomplished. The pool and deck area will be level and water runoff will be away from the pool. Water will drain away from the bath and shelter houses.

The small childrens area will be crowned and will drain toward the sides. The older childrens apparatus area will drain from the center to the southwest and northeast. Agricultural drain tile was placed between the swimming pool and the apparatus area to facilitate quicker runoff. The spray pool will have the minimum slope of six inches to 100 feet to assure good drainage. The surrounding areas will drain away from the spray pool.

SUMMARY

A good design was accomplished for the problem of developing a school-park site for a growing community in Eastern Kansas.

Careful thought was given to the site. In order to determine how the site could be best developed a study was made of existing facilities in the area, characteristics of the community, recreational trends, and the National Recreation Association's standards of park development. It was decided that as a school-playfield arrangement the facility would best serve the recreational needs of the community.

The area was designed with careful consideration given to all factors which are relevant to landscape design and park development.

The result was an area of pleasing appearance which provides for a maximum of use.

ACKNOWLEDGMENT

The author wishes to thank Professor L. R. Quinlan for his constructive criticism and suggestions.

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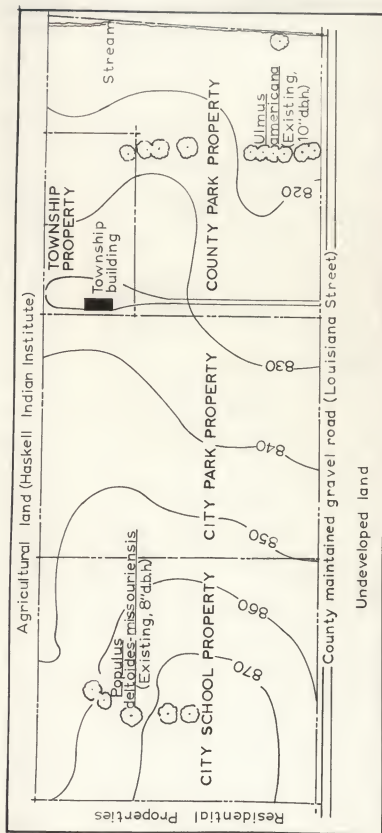
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APPENDIX

EXPLANATION OF PLATE I

The Undeveloped Site

PLATE I



THE BROKEN ARROW PARK UNDEVELOPED SITE



Scale:
One inch equals
two hundred feet

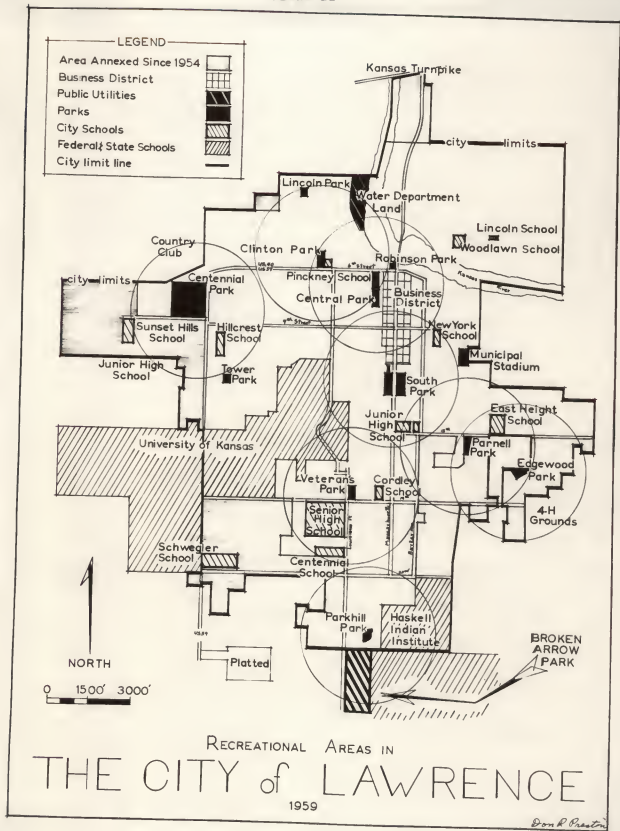
200 0 200 400

Don. B. B. B.

EXPLANATION OF PLATE II

The City of Lawrence

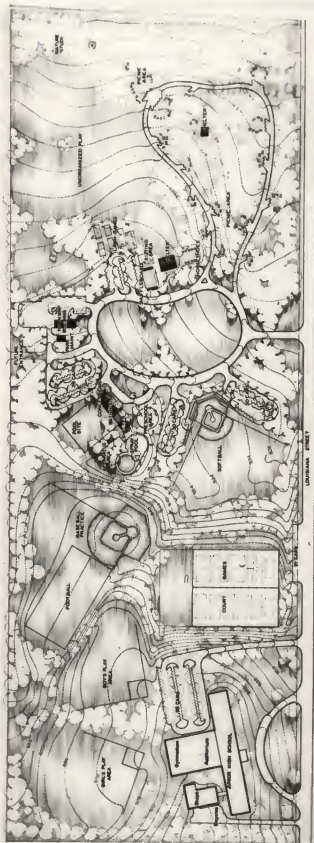
PLATE II



EXPLANATION OF PLATE III

The General Plan

PLATE III



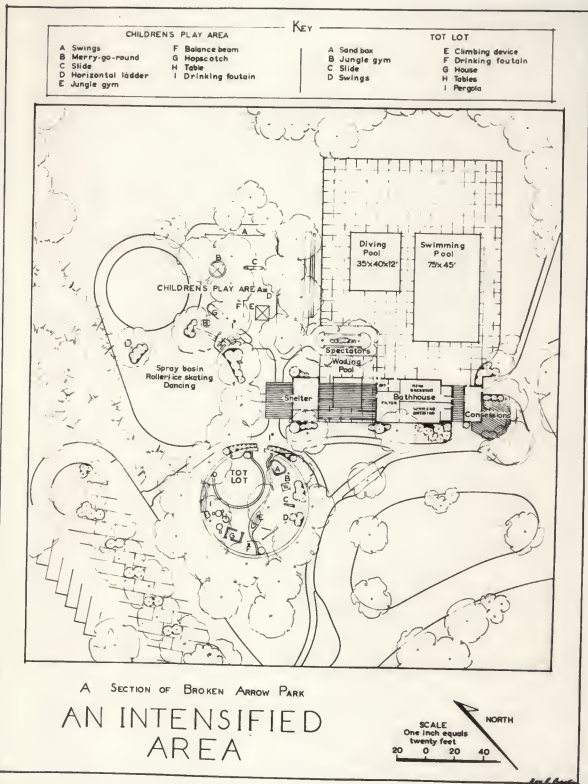
North
Scale
ONE HUNDRED SMALL FIFTY FEET

BROKEN ARROW PARK THE GENERAL PLAN

EXPLANATION OF PLATE IV

An Enlargement of a High Use Area

PLATE IV

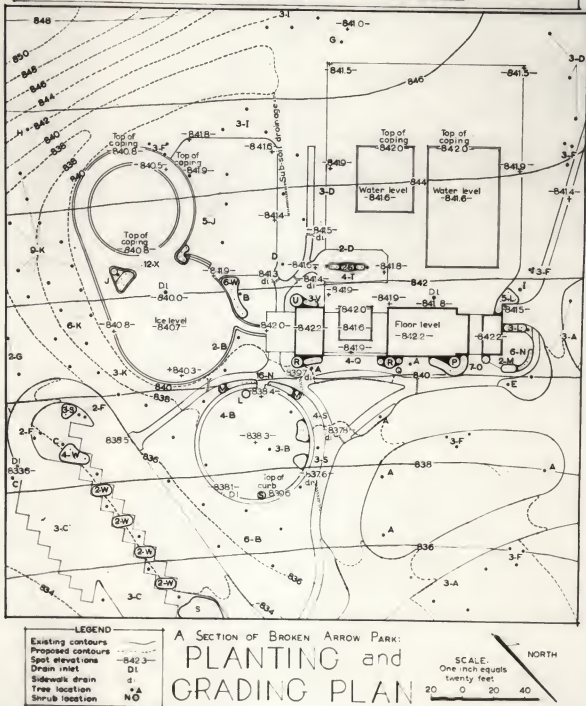


EXPLANATION OF PLATE V

Grading and Planting Plan for a High Use Area

PLATE V

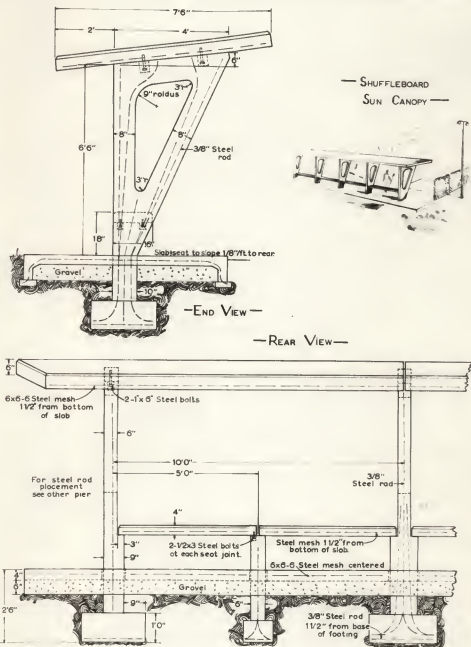
PLANT MATERIALS KEY					
A	<i>Tilia americana</i>	I	<i>Celtis laevigata</i>	Q	<i>Chaenomeles lagenaria</i>
B	<i>Fraxinus pennsylvanica lanceolata</i>	J	<i>Gleditsia triacanthos inermis</i>	R	<i>Syringa vulgaris</i>
C	<i>Platanus occidentalis</i>	K	<i>Pinus sylvestris</i>	S	<i>Spiraea vanhouttei</i>
D	<i>Quercus borealis</i>	L	<i>Prunus tomentosa</i>	T	<i>Spiraea thunbergi</i>
E	<i>Koeleria paniculata</i>	M	<i>Berberis mentenensis</i>	U	<i>Philadelphus coronarius</i>
F	<i>Cercis canadensis</i>	N	<i>Berberis thunbergi</i>	V	<i>Rhodotypos scandens</i>
G	<i>Carya illinoensis</i>	O	<i>Pyracantha coccinea islandi</i>	W	<i>Cornus stolonifera</i>
H	<i>Quercus macrocarpa</i>	P	<i>Juniperus virginiana Connert</i>	X	<i>Rhus aromatica</i>



EXPLANATION OF PLATE VI

Construction Detail

PLATE VI



CONSTRUCTION

DETAIL

— A CONCRETE STRUCTURE —

BROKEN ARROW
PARKONE INCH EQUALS
ONE FOOT

R. B. B. B.

THE DEVELOPMENT OF A SCHOOL-PARK SITE
FOR THE CITY OF LAWRENCE, KANSAS

by

DON RICHARD PRESTON

B. S., University of Kansas

1954

AN ABSTRACT OF A THESIS

submitted in partial fulfillment of the

requirements for the degree of

MASTER OF SCIENCE

Department of Horticulture

KANSAS STATE UNIVERSITY
OF AGRICULTURE AND APPLIED SCIENCE

1959

The thesis problem was to design a school-park site for a growing community in Eastern Kansas.

Recently the United States Department of the Interior donated 65 acres of land to Douglas County, Wakarusa Township, the City Schools, and the City Park System of Lawrence, Kansas. This acreage was previously agricultural land belonging to Haskell Indian Institute located at Lawrence.

A careful study of the site was made which included the physical features of the site itself, the surrounding land uses, the availability of public utilities and automobile access to the site. In order to determine how the site could best be developed careful thought was given to existing recreational facilities in the Lawrence area, characteristics of the community, recreational trends, and the National Recreation Association's standards of park development. It was decided that as a school-playfield arrangement the facility would best serve the recreational needs of the community.

The design was accomplished by the use of six illustrations which are included as plates in the appendix of the thesis. The illustrations show the undeveloped site, recreational areas in the city of Lawrence, a general plan of the developed site, an enlarged detail of a high use area of the park, a grading and planting plan for this same high use area, and construction details. Each plate is explained in various sections of the text.

A major portion of the thesis was devoted to explaining the illustration of the developed site. Because of problems peculiar to the school and township site, they were dealt with as separate units while the county-city park was discussed as one unit.

A junior high school is tentatively planned by the city schools to be developed on their site. In designing the area consideration was given to the buildings size and location on the site, its indoor and outdoor recreational

facilities; and pedestrian, bicycle and automobile accommodations.

The discussion of the township site is primarily an explanation of the existing development accomplished by the township and proposed improvements by use of plantings and parking lot re-organization.

The selection of specific recreational facilities to be included in the city-county park was based upon National Recreation Association standards, facilities in the existing Lawrence parks and interviews with the City Director of Recreation and the State Recreation Consultant.

An elucidation of the design for the park was accomplished by showing how the facilities offered and their inter-relationship meets the recreational needs of the community. A brief description of the characteristics of each age group and the facilities provided for them was given.

While planting design, grading and drainage, park lighting, and traffic circulation and parking are mentioned briefly in the discussion of the general plan a separate section of the thesis was devoted to each of these topics.

With careful consideration given to all pertinent factors an area of pleasing appearance with maximum useage was designed.